



## **An Assessment of the Role of ICTs in the implementation of Distance Education Programmes in Kenyan Universities**

**Wanjala Martin M. S.,**

(Lecturer MMUST)

**Mrs. Elizabeth Khaemba and Joseph Bii**

(Lecturer Kabianga)

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### **Abstract**

*This paper argues that it is time to think differently about assessing the role of Information Communication Technologies in the implementation of distance education programs in Kenyan public universities. The first section addresses the question, "What is the place of Media/ICT in DE?" The second section examines the purpose of distance education.*

*This paper discusses some of the roles of information communication technologies in distance education. The contents include: a discussion of factors affecting the teacher's role, which looks at teacher education and the lack of training provided in the use of educational technology, staff development and how retraining teachers in various aspects of technology can be accomplished to enhance the implementation of distance education programs in Kenyan universities.*

- *To identify and describe innovative, technology-based pedagogical practices that are considered valuable for the implementation of distance education programs.*
- *To provide information to national and local policy-makers that they can use to make decisions related to ICT in distance education.*
- *To provide educators and other practitioners with new ideas about how they can use ICT to improve distance education programs.*

- *To add to the body of research knowledge and theory about the factors that contribute to the successful and sustained use of innovative technology-based pedagogical practices in distance education.*

*A total of 200 educators and students from Kenyan Universities participated in the study. In each of the universities case study method was used to collect data on the pedagogical practices of teachers and learners, the role that ICT plays in these practices, and the contextual factors that support and influence them. Implications were drawn for both improved policy and classroom practices.*

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**Key words:** *Assessment, Role of ICTs , Distance Education Programmes, Kenyan Universities.*

### **Background**

Distance education is defined as "institution-based, formal education where the learning group is separate, and where interactive telecommunications systems are used to connect learners, resources, and instructors" (Schlosser and Simonson, 2002). This widely used definition does not specify which media, if any, are commonly used for learning at a distance. The term, interactive telecommunications systems, implies that instructors and learners use a variety of technological resources when teaching and learning at a distance.

Distance education has been a popular means for providing access to higher education for working families, military personnel and other people in remote areas for well over a century. Since the early 20<sup>th</sup> century, this form of education has proven to be a convenient way to earn college credits for millions of people unable to take up residence and attend classes on a traditional college campus. The tremendous growth of distance education can be attributed to technological developments, including the convergence of digital media. However, the forms and methods of message transmission used to deliver and exchange lectures, assignments and student feedback have a history that began as far back as the late 1700s.

The underlying technology that drives the Internet allows for the integration into computer presented instruction of photographs, animation, audio and video media in ways not available in print form. Communication technologies are available that permit both asynchronous exchanges (email, discussion boards) and synchronous modes of communication (audio and videoconference, chat) at a distance. Despite new advances in technology, all forms of distance instruction – whether in web-based or correspondence-by-mail format – share common characteristics that distinguish these instructional systems from traditional classroom and lab

methods. For example, distance instruction is delivered without students and tutors meeting personally. It is carried on in person-to-person exchanges at a distance without classrooms. The exchanges are almost always asynchronous (with time gaps between sending and receiving). In addition, courses are pre-produced and include resources that allow students to work independently from the instructor (Holmberg, 1980). Empirical studies suggest that using multiple media in distance instruction can often enhance learning, because capabilities exist to give those in such learning environments a compelling experience that emphasizes immediacy. However, many questions remain as to whether the new media that are being employed in this way actually do achieve these ends. It is this issue on which the present report is focused. It has implications for students with learning styles that favor auditory and visual content. It also raises questions related to the quality of instruction that is offered through distance programs. Another important consideration is whether students are fully informed of the teaching methods used in a course prior to enrolling in a distance education class. While there is sufficient evidence that distance learning programs can be educationally effective, and that for many people they can provide a valuable service, this research sought to discover the depth of media use to achieve immediacy and to accommodate a variety of learning styles.

Media richness theory proposes that each medium has capacities for reducing ambiguity, facilitating interpretations and increasing understanding (Daft & Lengel, 1984). Central to this theory is that face-to-face communication offers the greatest amount of information in an exchange of information. Face-to-face exchanges between two people within arm's reach are considered the most 'media -rich' communication because all of the senses play a part in sending and receiving information. As channels of communication are reduced (or removed) communication is less effective (Biocca, Harms & Gregg, 2001; Hiemstra, 1982). Conversely, if distance learning environments are text-based, adding other forms of media have the potential to fill in missing channels of communication that may be lacking.

Higher education in Kenya is facing a critical challenge to meet new demands for the 21st century, with its ever increasing population growth. This means that those seeking access to education at all levels - primary, secondary, and tertiary - will increase. In spite of this fact, educational institutions in Kenya are not expanding enough to accommodate the increasing number of students who'll be seeking access to higher education. Kenya needs an educational environment that would make it more responsive to challenges confronting the country.

Alternative ways of providing access to higher education via distance education need to be fully explored. Distance education makes it possible for students anywhere who have Internet and Web connections to enroll in online courses. Even though the application and use of information technology in education in Kenya has been severely underutilized, over the past few years there has been tremendous growth in the use of information technology.

With advances in computer technology and especially the internet, a number of e-learning initiatives and innovations are being made worldwide. In Kenya, many stakeholders are working hard to make education affordable to many through the use of information technology (ICT). Efforts are being made by such institutions as computers for schools Kenya, the Kenya Institute of Education, the Ministry of Education, through the Nepad e- schools initiative, and the ICT trust fund. It is through proper coordination of these efforts that e-learning will achieve its intended purpose.

### **The Promise of Distance Education**

Kenya's educational institutions are confronted with several challenges. There is an enormous challenge in training a cadre of highly qualified professionals to fuel development and address the challenges confronting the country. There are inadequate educational resources, with a loss of the best talented faculty to the outside world. There is a need to provide a more flexible educational system for students. Given these challenges, it is highly unlikely that current educational institutions in the country will be able to provide access and affordable education to all of those seeking access to higher education. Even though tertiary institutions have a responsibility in producing scholars, the universities are constrained by space, time, and money. Finally, there is a need to adopt innovative learning methods that will permit the delivery of education to the majority of those seeking higher education.

Distance education appears to offer an option for Kenyan students but many are not in a position to afford it. Distance learning can provide instructionally effective, highly interactive learning experiences that are flexible, equitable, and responsive to individual needs (Rogers, 1996). Studies show that distance education is more cost-effective than traditional programs, especially with large student enrollments and a good support system for students (Daniel, 1996). Unit costs per student are below those of conventional programs (Daniel, 1996).

The promise of Information Communication Technology (ICT) in the country is enormous. ICT is expected to serve as a catalyst to Kenyan communities, allowing them to profit from and

contribute to an increasingly globalized society. Emerging ICT holds much promise for breaking down traditional barriers that have limited higher education.

Today, through distance learning strategies and computer applications, we can expand the content, extend the reach, and increase the effectiveness of existing academic programs. Through emerging communication technology, effective computer-delivered coursework could be developed while at the same time improving access to scientific and technical information.

### **Delivery Platforms**

Various delivery platforms and technologies have been employed in distance education, including correspondence courses; television (usually - but not always - through public broadcasting stations); audio, video, and computer conferencing; radio; Web-based computer technologies; and, satellite-based technologies (Dixon, 1996; Witherspoon, 1996). In Africa, the use of one-way radio to deliver educational material is widespread. Countries with a fairly sophisticated information infrastructure already in place (such as South Africa, Zimbabwe, and Senegal) have been experimenting with more advanced technologies such as two-way video and computer conferencing on a pilot scale. Some countries entering the distance education arena have used less expensive delivery platforms such as audio, prerecorded instructional television, and educational broadcasting. There have been tremendous efforts in Kenya to enhance distance education using such platforms.

### **Research Questions**

The purpose of the present research, then, was to investigate to what degree a diverse set of media is being used in distance education courses. Empirical studies have shown that using multiple forms of media can enhance learning, but there is little information on how these media are currently being used in distance learning programs. Therefore, this study was an exploratory work designed to assess media use in online courses and to gauge the amount of information available for students who are new to distance learning. These questions have implications for students with learning styles that favor auditory and visual content, and it raises questions related to the quality of online instruction that is offered through distance programs.

RQ1: Which new communication technologies are being used in distance education courses and what is their distribution or use?

RQ2: How are information communication technologies being used to support distance education curricula?

## **Method**

### **The Study Approach**

A total of 200 educators and students from Kenyan Universities participated in the study. In each of the universities case study method was used to collect data on the pedagogical practices of teachers and learners, the role that ICT plays in these practices, and the contextual factors that support and influence them.

## **Results**

### **Media use**

The 16 items included on the media checklist were categorized into four groups. These were text-print, audio, graphics-animation and audio-visual. The media associated with each were then arranged on an ordinal scale. Overall, the average number of media used in online teaching methods was 4.13 with the greatest number of respondents the text print.

Video or broadcast television was the next most frequently mentioned medium being used, including archived, one-way (asynchronous) and live two-way (synchronous) events. The majority of online audio-visual media content consisted of taped classroom lectures available for distance students through a digital archive.

The use of teleconferencing in distance classes is the most commonly mentioned method for audio communication. As in the case of audio-visual media, pre-recorded lectures were taped and mailed, or were available online, as a digital media resource.

In addition to assessing the variety of media used in course instruction, also tracked was how students new to distance education might learn what kind of experiences are included in the classes, or whether this manner of education will be suitable for their learning style.

## **Discussion**

What the results of the present analyses reveal is that, overall, institutions do not communicate well to prospective students concerning the issues discussed above. In general, then, the results of this research indicate that only a relatively small number of the institutions in this sample appear to employ a truly diverse set of media in the delivery of instruction, with most favoring text as the principle mode of communication. In spite of the advancement of new communication technologies that might add more channels of communication to text-based instruction to create a 'media -rich' learning environment, the delivery of course instruction online appears to rely heavily on email, chat and discussion boards. From this perspective, then, online courses can be

viewed as electronically bound volumes, employing electronic (rather than printed on paper) text as the principle mode of communication. What this implies is that while electronic delivery has obviously made the delay in communication much shorter, in many cases these new means of communication have not substantially changed the basic mechanics of instruction from what it was in the 19<sup>th</sup> century. This raises questions as to whether distance education programs are advancing education through innovative use of new communication technologies. At the same time, students may not have sufficient information to gauge whether their learning style 'fits' online course work as they prepare to enter their first online experience.

Specifically, by examining how new communication technologies are being used, are there any implications that might suggest a better use for new communication technologies? As the new technologies that are so pervasive in consumer markets are finding new uses in education, it may be time for our universities and colleges to move more quickly to adopt these for educational purposes.

Media enhanced the development of distance education as developments in educational technology have enhanced the delivery of materials online. There has been advancements in technologies with developments in multi-media technologies encompassing audio, visual/text, graphics etc. Distance education encompasses various technologies from correspondence to virtual learning by use of computers and mobile phones. Distance education and technology are intrinsically linked. Technology bridges the gap between learner and tutor. The use of compact discs, and flash discs has enhanced transfer of information.

Multiple technologies i.e. digital media are a boost to distance education. This has culminated into the era of wire less technology usage in distance education. Connectivity/convergence of telecommunications and computers has ensured a flexible mode in distance education. The use of mobile phones and hence a shift to M-learning can improve distance learning. The study on Media/ICT in distance education is viable considering the mediating role performed by media in distance education. This paper entails a discussion on the link between media/ICT in distance education.

### **Types of media used in distance education**

Distance education is often called online learning because Internet-connected computers are the primary delivery vehicles that bring together teacher and learner. This connection implies the replacement of face-to-face instruction that has existed

since the beginning of time. It is understandable then that distance education often mimics face-to-face learning. The availability of contemporary technological tools creates opportunities for teachers to engage learners without directly facing them and, at the same time, to enhance the process.

### **Print**

One of the major distinctions in the history of distance learning has been its medium of delivery. Some of the early programs were delivered primarily in print and are often referred to as correspondence courses. Correspondence study was conducted largely through the mail. The instructional media were books and other printed materials. The papers that passed from teacher to learner and vice versa provided the interaction.

Today, the most common medium for learning at a distance is still paper-books, study guides, and bibliographies--while it may not be as glamorous as some of the colorful computer-based graphic resources.

### **Radio and Telephone**

Another "old-timer" is radio. There are many examples of using radio for teaching and learning. Radio is a synchronous medium; that is, all learners have to be listening at the same time even though they are in different locations. Later, radio learning was enhanced by telephone conference calls during or after the initial audio presentation. Instruction by both telephone and radio usually incorporated printed materials as part of the delivery system.

### **Audiotapes and Television**

Still later, disc recordings and recorded tapes offered an extension of radio and telephone communication. With the advent of audiotape, radio programs could be recorded and sent to learners, who could then choose the time and place to listen and respond to the materials presented in the audiotapes. When broadcast television became available, complete courses were offered (often at early morning hours) with supplemental materials, such as printed texts and audiotapes.

Each new delivery vehicle often absorbed support media from previous systems. Each communication vehicle was the framework that permitted interaction between teacher and student, thus validating each approach as a delivery system. These approaches retained the feeling and experience of most traditional face-to-face classes. Other variations, such as complete courses on audiotape or videotape, followed and incorporated some of the earlier media



and interactive procedures between distance teachers and learners. Closed circuit television offered still another approach. Lessons were offered simultaneously to students in remote locations, such as a university campus or individual school buildings in a school system.

### **Computer-based**

Current distance learning programs are increasingly relying on computer technologies but still use traditional media as resources for effective learning. These media are relatively inexpensive and can reach many individuals who prefer to study whenever and wherever they wish. The downside of one-way media use, with the exception of the telephone, is that interaction is limited and feedback is often delayed because of slow postal systems that deliver both study materials and responses to learner papers.

Nevertheless, these media are often part of the delivery system package even as computer-based distance education continues to grow.

### **The role of media in distance education**

Media in distance education plays the following roles;

- Motivating role; students keep following without easily getting bored.
- Representative role; it is assumed that in the absence of the teacher who would be making explanations to students, the material plays a role.
- Mediating role; this is the communicating role, where the media itself carries the message in the same way the teacher wishes to students. Media carries the teaching.
- Retention role; allow easy and repeated reproduction of an event or procedure.
- Visual access to a process or technique.
- Gain and hold attention of the learner.
- Media ensure delivery of distance education programmes.
- Media is used in coordinating and monitoring distance learning programmes through student evaluation.
- Distance education and technology are intrinsically linked. It is through information communication technologies that the gap between the learner and tutor is bridged.
- Media enhanced the development of distance education. Technology establishes a link between the teacher and student and hence being able to teach face to face at a distance. Technology is the basis for flexibility in distance education as it ensures self paced learning.

## **Selecting Media for Distance Education**

There is a large range of media available for distance education which raises the question: which media is best? The response to this question is that no media is better than another (Ray 1987). Media selection in distance education highly impinges on appropriateness. It is against the above concern that this paper, among other tasks, endeavors to illuminate factors for selecting distance education media under the following subheadings:

**The course objectives:** Selecting media for distance education begins with consideration of course (or unit) objectives as a starting point. Despite the fact that there is a dearth of media for distance education, the issue of relatedness to course objectives must still be addressed. If learning can be facilitated by seeing, hearing or using manipulative media, which medium or media should be used to achieve the objectives and how will it be delivered? Can it be integrated with an online course management system (such as Blackboard) or should it be separate for use in conjunction with printed handouts and online guidance?

### **Learner factors**

Lava (1990) supports the view that learners have various preferences, perceptual difficulties, attitudes, experiences and backgrounds, interests, level of motivation, individual differences, and physical disabilities, among others. For that reason, the credibility of the media with the learner is an important consideration. The level of familiarity of learners with the media will affect the treatment of the information (in-depth/ brief) carried.

### **Subject matter**

The nature of the subject matter will lend itself to different media (Gottschalk TH 1996). Further different components of the subject may be distinguished, such as a theory and a practical component. There is need to consider the cost and ease of updating the subject matter that tends to vary between media. The frequency of change in subject matter may be a subject of treatment. For example a Web page can be updated instantly with a minimal cost associated (generally time is the major investment and the cost is the same, regardless of the number of students). Conversely, reprinting of modules involves layout, paper, printing and distribution costs and increases with the number of students.

### **Availability**

Will the learner have access to the medium at home, work or in a community setting? Some media tend to be scarce in some environment and others are power driven, yet electricity supply is unavailable in some places.

### **Affordability**

Affordability factors which could influence media selection include: the cost to students, for example a video cassette may be cheaper to purchase than a large printed text book. The cost of the equipment necessary to utilize the media must also be considered. It may be cheaper to purchase a video tape than a large printed manual, but the cost to purchase /access a television set and video player to view the video cassette should be taken into account. The initial cost of purchasing the manual may be higher, but it is the only cost associated with using this medium.

### **Socio-cultural restrictions**

The social and cultural systems in which media function and how those systems influence media access, exposure and impact are vital. These systems should be considered as well as simply how individuals respond to media and messages (Crowder 1991). This issue pertains to sensitive topics like sex, religion and cultural beliefs.

### **Legal policies and regulations**

Access to some media will be affected by policies and regulations. In some places the use of certain media (e.g. radio and Internet) by groups other than the government is restricted or prohibited. When selecting communication technologies for learners from such areas, it is essential to consider how access is controlled, and by who; who decides what information systems can be made available, and to whom must be established (Norrish 1997).

### **Conclusion**

For reasons unrelated to the above factors. A media bias may arise from a high level of familiarity with a particular media, lack of interest in utilizing another media. When a bias for a particular media exists, instead of asking "what is the appropriate media for a particular distance learning situation", the question asked is "what course can be developed using this media. Caution should be taken during the development; in many instances the needs of the potential target audience are subjugated to a particular technology, is equally applicable in distance education. To avoid a bias for a particular medium, the focus of the educator should be teaching and learning and the media should be considered merely a tool which is used in a given situation.

All media available for distance education may be best in certain cases, and all may be worst in certain cases, either singly or in combination with other media. The number of factors discussed should be given consideration when selecting a media for distance. Special considerations for distance learning are as follows: (1) determine your primary delivery approach (online or hybrid); (2) review the course outline to determine where media can be used to facilitate learning; (3) ascertain availability of student access to the media selected; and (4) locate appropriate resources to fit your objectives or plan to create them.

Be sure to consider alternative media that may be less expensive, yet potentially as effective as more expensive media. For example, print, audio and video recordings, and the telephone should be considered in the selection process. The challenge is to select and provide appropriate media that will accomplish learning objectives in the most cost-effective manner. Remember, there are often less expensive alternatives that will accomplish the same objectives.

#### Challenges in using information communication technologies in distance education

- Lack of adequate infrastructure which include electricity, water, telephone and roads that are essential in any society.
- Lack of support from governments on the integration of technologies. Such governments institute policies that discourage foreign investments. Governments do not create incentives for innovation and entrepreneurship.
- Lack of considerable investments in science and engineering which are integral in innovation and entrepreneurship. Scientists are discouraged to invent.
- Financial constraints and lack of essential resources for implementing technologies integration and use.
- How technologies can be infused into distance education curriculum and instruction effectively.
- Lack of knowledge/competencies on use of technologies.

#### **Recommendations**

To overcome the challenges, the paper recommends the following:

- Educate governments to promote the use of technologies, build necessary infrastructures both physical and academic, train scientists, technologists and engineers.
- Promote innovation through providing incentives and investing in university education.

- Create transferable technology platforms that can have far reaching implications on the economy.
- Leverage existing technologies e.g. mobile phones can be leveraged to solve the problems.
- Include developing nations in ICT initiatives.
- Promote collaboration through knowledge transfer which enhances sharing of knowledge and experiences.

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